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Life Expectancy Determination of Form-wound Coil Isolation of High-voltage Motor

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Isolation capability of organic and inorganic isolation materials is considerably different in respect to time. There is a relatively poor dependence on time in case of inorganic isolation materials. It is very significant in case of organic materials (that are more often in use). This paper will consider life expectancy of form-wound coil isolation of high-voltage motor depending on the part of form-wound coil where it is located. Namely, although the form-wound coil of a high-voltage motor is uniformly isolated, it appears that breakdown in a form-wound coil happens mainly in certain points. The paper starts from the presumption of Weibull distribution of random variables breakdown voltage and breakdown time. Certain relation between parameters of these distributions and life expectancy exponent will be specified on basis of this presumption. Expectancy life exponent of form-wound coil isolation of high-voltage motor will be determined on basis of this relation and adequate experimentally determined parameters of Weibull distributions (depending on the position on the form-wound coil). Quantile dependence of breakdown probability on form-wound coil depending on the position on the form-wound coil will be determined on basis of knowing the expectancy life exponent.

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